



## Beyond borders, beyond sight: cross-border AI-enabled digital surveillance for TB among mobile population at the Lagos-Abidjan corridor

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**Background:** Cross-border migrants along the Lagos-Abidjan corridor are systematically excluded from national TB surveillance and care pathways. Mobile populations rarely access fixed health facilities, leaving asymptomatic TB cases undetected and treatment continuity routinely broken at border transitions.

**Objective:** We aimed to evaluate whether integrating AI-enabled digital chest X-ray screening with WHO symptom screening could close the TB detection and care continuity gap among mobile migrant populations at the Seme border.

**Methods:** We conducted a prospective feasibility study in November 2024 at the Seme border crossing (Nigeria-Benin). Consenting adult migrants underwent the WHO four-symptom screen (W4SS) and AI-enabled digital chest X-ray (CAD4TB, threshold  $\geq 40$ ). GeneXpert MTB/RIF confirmed bacteriological diagnoses; radiologists reviewed flagged images remotely. CTWs led mobilisation, treatment initiation and linkage to directly observed therapy (DOT) facilities on both sides of the border. Descriptive statistics are reported with exact counts.

**Results:** Of 278 migrants screened, 36 (12.9%) met the presumptive TB threshold; 7 (19.4%) were identified exclusively by CAD4TB, all asymptomatic. Four TB cases were confirmed (1 bacteriologically, 3 clinically), a detection rate of 1.4% (4/278). All four were linked to treatment by CTWs, and a six-month follow-up confirmed treatment completion in all four cases.

**Conclusion:** This integrated model successfully reached an otherwise invisible migrant population, detected asymptomatic TB, and sustained treatment continuity across a national border. The rapid result turnaround intrinsic to AI-enabled CXR systems further supports same-day clinical decisions in transit settings. National TB Programmes across ECOWAS should adopt this model at high-volume border crossings.

